ORIGINAL COURSE IMPLEMENTATION DATE: September 2020
REVISED COURSE IMPLEMENTATION DATE: September 2022
COURSE TO BE REVIEWED (six years after UEC approval)**:** January 2026
Course outline form version: 09/08/2021

OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

Note: The University reserves the right to amend course outlines as needed without notice.

Course Code and Number: ELTR 150	**Number of Credits:** 3 Course credit policy (105)
Course Full Title: Solid State Electronic Devices **Course Short Title:**	
Faculty: Faculty of Applied and Technical Studies	**Department (or program if no department):** Electronics

Calendar Description:

Introduction to semiconductor devices and their applications. This course explains how electronic circuits work and how to analyze, design, modify, and combine them to perform complex functions. Students will analyze and design common operational amplifier (op-amp) circuits and examine the op-amps non-ideal characteristics in terms of circuit performance.

Prerequisites (or NONE):	None.
Corequisites (if applicable, or NONE):	None.
Pre/corequisites (if applicable, or NONE):	ELTR 100 and ELTR 105.

Antirequisite Courses *(Cannot be taken for additional credit.)*

Former course code/number:

Cross-listed with:

Equivalent course(s):

(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)

Typical Structure of Instructional Hours

Lecture/seminar	30
Supervised labroratory hours (design lab)	15
Total hours	**45**

Scheduled Laboratory Hours

Labs to be scheduled independent of lecture hours: ☐ No ☒ Yes

Course Details

Special Topics course: **No**
(If yes, the course will be offered under different letter designations representing different topics.)

Directed Study course: **No**
(See policy 207 for more information.)

Grading System: **Letter grades**

Delivery Mode: **May be offered in multiple delivery modes**

Expected frequency: **Winter only**

Maximum enrolment (for information only)**: 36**

Prior Learning Assessment and Recognition (PLAR)

PLAR is available for this course.

Transfer Credit *(See **bctransferguide.ca**.)*

Transfer credit already exists: **No**

Submit outline for (re)articulation: **No**
(If yes, fill in transfer credit form.)

Department approval	**Date of meeting:**	November 9, 2021
Faculty Council approval	**Date of meeting:**	November 18, 2021
Undergraduate Education Committee (UEC) approval	**Date of meeting:**	January 28, 2022

Learning Outcomes *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

Upon successful completion of this course, students will be able to:

1. Describe and analyze the electrical characteristics of diodes, BJT, JFET and MOSFET.
2. Analyze the different Transistor biasing techniques and calculate bias voltages and currents.
3. Analyze BJT/ MOSFET both as amplifier and switch.
4. Describe and measure important specifications of op-amps.
5. Analyze the frequency response of amplifiers using common test equipment.
6. Analyze positive and negative feedback with operational amplifiers and other circuits.
7. Design and test regulated power supply circuit.
8. Explain the design and application of active filters.

Recommended Evaluation Methods and Weighting *(Evaluation should align to learning outcomes.)*

Final exam:	40%	Quizzes/tests:	20%		%
Assignments:	10%	Lab work:	30%		%

Details:

NOTE: The following sections may vary by instructor. Please see course syllabus available from the instructor.

Texts and Resource Materials *(Include online resources and Indigenous knowledge sources. Open Educational Resources (OER) should be included whenever possible. If more space is required, use the Supplemental Texts and Resource Materials form.)*

	Type	Author or description	Title and publication/access details	Year
1.	Textbook	Thomas L. Floyd	Electronic Devices (Electron flow version)	2017
2.				
3.				
4.				
5.				

Required Additional Supplies and Materials *(Software, hardware, tools, specialized clothing, etc.)*

Course Content and Topics

- Semiconductors
- Diodes, diode applications, special action diodes, diode biasing
- Bipolar Junction Transistors (BJTs), transistor biasing
- BJT amplifiers, BJT power amplifiers, multistage amplifiers, differential amplifier
- Field Effect Transistors (FETs), FET amplifiers, amplifier frequency response
- Thyristors, silicon-controlled rectifiers, diacs, triacs, unijunction transistors
- Operational amplifiers, op-amp circuits
- Active filters, oscillators, voltage regulators